Atty. Dkt. No. P66025US0

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Andreas BOSIO et al.

Serial No.: 09/701,584 Group Art Unit: 1645

Filed: February 1, 2001 Examiner: Unassigned

#11
11/19/01

For: SUPPORTS FOR THE PARALLEL IDENTIFICATION AND TRANSCRIPTION PROFILING OF POLYNUCLEIC ACIDS

RESPONSE AND REQUEST TO ACKNOWLEDGE RECEIPT OF ALL CERTIFIED COPIES IN ACCORDANCE WITH 35 USC 119

Commissioner of Patents
Washington, D.C. 20231

Sir:

This paper is submitted in response to the Office action mailed May 9, 2001.

Acknowledgment of §119 priority is incomplete. The "Office Action Summary" page is marked so as to acknowledge receipt of only "Some" of the certified copies of § 119 priority documents, which is incorrect. The Form PCT/IB/304 in the present record, mailed 24 August 1999 by the International Bureau, acknowledges receipt of certified copies of both priority documents. Accordingly, Applicants have satisfied the requirements for providing certified copies of both foreign applications to which priority is claimed under 35 USC 119. Applicants request that the Examiner mark the next Office Action so as to acknowledge on the record receipt of certified copies of "All" priority documents, as required under PTO Rules.

Marking (on the Office Action Summary Form, section 13) that "Some" of the priority documents were received is further incorrect in that the body of the Office Action fails to identify the certified copy "not received."

Claims 1-10 are pending.

The Office Action contains a rejection, applied against claims 1, 3-6, and 8, for alleged lack of novelty under 35 USC 102(b) based on U.S. 5,688,642 (Chrisey) and a rejection, applied against claims 1-10, under 35 U.S.C. § 103(a) for alleged obviousness based on the combined teachings of *Nucleic Acid Research, 22*, 5456-65, 1994 (Guo), *Bioassays, 18*, 427-431, 1996 (Schena), and Chrisey. Reconsideration of the rejections is requested.

All of the references relied on to reject the claims are cited in the International Search Report of record.

For anticipation to exist under § 102(b), each and every claim limitation, as arranged in the claim, must be found in a single prior art reference. *Jamesbury Corp. v. Litton Industrial Products, Inc.*, 225 USPQ 253 (Fed. Cir. 1985). The absence from a prior art reference of a single claim limitation negates anticipation. *Kolster Speedsteel A B v. Crucible Inc.*, 230 USPQ 81 (Fed. Cir. 1986). A reference that discloses "substantially the same invention" is not an anticipation. *Jamesbury Corp.* To anticipate the claim, each claim limitation must "*identically* appear" in the reference disclosure. *Gechter v. Davidson*, 43 USPQ2d 1030, 1032 (Fed. Cir. 1997) (*emphasis added*). To be novelty defeating, a reference must put the public in possession of the identical invention claimed. *In re Donahue*, 226 USPQ 619 (Fed. Cir. 1985).

The rejected claims (claims 1, 3-6, and 8) are limited to the specific "rigid homobifunctional linkers" recited in claim 1, i.e., one

> selected from the group of rigid homobifunctional linkers consisting of:
> 1,4-disubstituted benzene, 2,7-substituted fluorene, 2,6-substituted naphthalene, 2,6-substituted anthracene, 2,7-substituted phenanthrene, 4,4'-substituted biphenyl, 4,4'-substituted benzoin (C_6H_5-CO-CO-C_6H_5), 4,4'-substituted benzophenone (C_6H_5-CO-C_6H_5), 4,4'-substituted diphenylmethane (C_6H_5-CH_2-C_6H_5), 4,4'-substituted stilbene (C_6H_5-CH=CH-C_6H_5), 1,3-substituted allene (CH_2=C=CH_2).

None of the aforesaid "rigid homobifunctional linkers" is disclosed in Crisey. Accordingly, a limitation found in all the rejected claims being absent from Crisey, the rejection for alleged anticipation is negated. *Kolster Speedsteel, supra.*

With respect to the obviousness rejection under §103(a), according to the statement of rejection, Guo et al. allegedly teach the presently claimed invention except for the length of the immobilized nucleic acids of 200 to 600 bp. The statement of rejection argues that Schena discloses that the immobilized polynucleotides are cDNAs which code for a whole gene which can be as short as 200 bp long.

The average size of whole genes after splicing is about 1200 to 1500 bp. According to the presently claimed invention, neither short oligonucleotides nor whole genes are used for immobilization. The presently claimed invention is limited to "bifunctional spacers and bifunctional linkers [that] have a length of from 200 to 600 bp" (claim 1) or use of "nucleic acids having a length

of from 200 to 600 bp" (claim 9). According to page 3, 3rd paragraph of the specification of the application the use of complete cDNAs is not advisable.

Guo et al. start from synthetic 5'-amino-modified oligonucleotides (*see* materials and methods under the heading "oligonucleotides" on page 5457 of Guo et al). Routine synthesis of oligonucleotides is limited to oligonucleotide sizes up to 80 nucleotides. Therefore, a person skilled in the art cannot simply extend the method of Guo to nucleic acids having a length in the range of 200 to 600 bp. As taught in the present specification, the presently claimed invention involves use of an amplification reaction, i.e., the polymerase chain reaction (PCR). Guo mentions PCR, but not for the preparation of the nucleic acids immobilized on the glass support. Guo mentions the use of PCR for preparation of the DNA samples.

In contrast to the teaching of Schena, the method of the presently claimed invention uses neither full length genes nor randomly selected fragments. In accordance with the presently claimed invention, fragments are selected based on knowledge about the sequence of the genes. A length of "200 to 600 bp" of the so called guide-DNA is specifically selected in accordance with the presently claimed invention so as to avoid hybridization between the guide-DNA and several nucleic acids in the probe. Such hybridization would result in false positive signals (*see* present specification, page 8, paragraph 2). Schena does not teach that using nucleic acids of a rather similar length in the range of 200 to 600 bp provides the advantage of a smaller variation in the hybridization signals for the different tested genes in the probe.

The deficiency of teaching immobilized nucleic acids having a length of 200 to 600 bp is not met by the teachings of Chrisey. Chrisey uses synthetic oligonucleotides for immobilization (*see* Crisey, example 9). Crisey mentions nucleic acid oligomers having about 400 bases (Crisey claim 13), but smaller oligomers are clearly preferred, e.g., from about 20 to about 100 bases (Crisey claim 14) and 20 bases (Crisey examples, such as Example 9, at column 14, line 61). As explained, above, chemical synthesis cannot be used as a routine process for synthesizing nucleic acids of 200 to 600 bp.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). When conducting an obviousness analysis, "all limitations of a claim must be considered in determining the claimed subject matter as is referred to in 35 U.S.C. 103 and it is error to ignore specific limitations distinguishing over the [prior art] reference." *Ex parte Murphy*, 217 USPQ 479, 481 (PO Bd. App. 1982).

In the present situation, it is neither taught nor suggested in the cited prior to use nucleic acids having unified length "of from 200 to 600 bp," as recited in the present claims. Thus, none of the three cited references, taken alone or in combination, teaches or suggests the presently claimed invention. *Royka, supra.*

Favorable action is requested.

Respectfully submitted,

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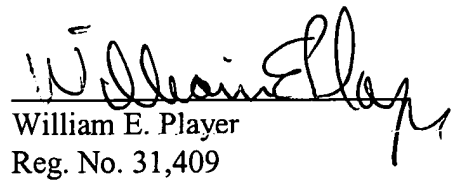
By: 
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